



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,686	04/30/2002	Robert A Leydier	76.0531	2354
41754	7590	11/28/2007		
THE JANSSON FIRM 9501 N. CAPITAL OF TX HWY #202 AUSTIN, TX 78759			EXAMINER ARORA, AJAY	
			ART UNIT	PAPER NUMBER
			2811	
			MAIL DATE	DELIVERY MODE
			11/28/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/807,686

Applicant(s)

LEYDIER ET AL.

Examiner

Ajay K. Arora

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-7, 10, 12-17, 19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 3 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 5-7, 10, 12-17, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

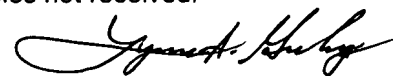
Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.



LYNNE GURLEY
SUPERVISORY PATENT EXAMINER

AK 2811, TC 2800

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/10/2007 has been entered. An action on the RCE follows.

Specification

The disclosure is objected to because of the following informalities: the disclosure has some hand written terms and they appear to have been abbreviated. As a result, the specification is not clear. Appropriate correction is required. Further, as currently presented, the specification is provided in two different documents, making it difficult to provide reference to specific parts of the specification by page and line number. Given that the corrections to the specification are extensive, a corrected, consolidated specification which is clearly typed in the required format is requested.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

Art Unit: 2811

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 5-7, 10, 12-17 and 19-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1 and 20 recite "an additional layer of silicon that is sealed to the active face of the silicon substrate layer by a sealing layer". In the specification of 4/16/2001, there is no description of the above "additional layer of silicon". Please note that the following have been struck off from the specification: reference to Figures 4A-4C (page 3, lines 16-18), Figures 6A-6D and 7A-7D (page 3, lines 22-27); the description of Figure 3B (page 4, lines 30-37 and page 5, lines 1-10). In particular, if the description of Figure 3B (page 4, lines 30-37 and page 5, lines 1-10) is restored, the above rejection can be overcome. There appear to be some abbreviated, hand written notes on the specification but it is not clear what they mean. They should be clarified.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2811

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5-7, 14-17, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orcutt (US 4,712,129), hereinafter Orcutt, in view of Zhang (US 5,886,364), hereinafter Zhang.

Regarding claim 1, Orcutt (refer to Figure 1) teaches a chip (12) that is capable of functioning as a chip-containing portable article, the chip comprising a silicon (Col. 1, lines 50-52) substrate layer (substrate layer of chip 12) having an active face with circuits integrated therein (Col. 2, lines 30-33), and an additional layer (18) of silicon (Col. 3, lines 3-5 and 41-42) that is sealed to the active face of the silicon substrate layer by a sealing layer (20), the additional layer of silicon (18) covering at least part of said active face (Col. 2, lines 30-33), the additional layer of silicon comprising physical means for providing physical protection (Col. 3, lines 1-3).

However, Orcutt does not teach that:

- a). that the integrated circuits define "a central processor unit and memories"; and
- b). that said additional layer of silicon that comprises physical means for protection is such that the physical protection is "against the action of electromagnetic radiation in the infrared range at a wavelength longer than 1 μ m".

Art Unit: 2811

Integrated circuits defining memories and associated central processor units are well known in the art. It would have been obvious to one of ordinary skills in the art at the time of the invention to modify Orcutt such that integrated circuits that define a central processor unit and memories are well known in the art. The ordinary artisan would have been motivated to modify Orcutt for at least the purpose of providing the device with a memory circuit functionality that can be controlled by a central processor unit, as is typical of many computing devices.

Zhang teaches a semiconductor structure comprising a layer of silicon having a phosphorus dopant concentration of about 10^{20} atoms per cm^3 (Col. 3, lines 31-34), which according to applicant's specification (see page 6, lines 5-24), provides physical protection against the action of electromagnetic radiation in the infrared range at a wavelength longer than $1\mu\text{m}$. It would have been obvious to one of ordinary skills in the art at the time of the invention to modify Orcutt such that the additional layer is a layer of silicon with the above described dopant concentration and thus comprises physical means for protection is such that the physical protection is against the action of electromagnetic radiation in the infrared range at a wavelength longer than $1\mu\text{m}$. The ordinary artisan would have been motivated to modify Orcutt for at least the purpose of providing protection to certain portions of the chip from incident light of the specific wavelengths that the device is expected to be exposed to.

Regarding claim 5, Orcutt as modified by Zhang above, teaches that the means providing physical protection against the action of electromagnetic radiation are silicon dopants (as explained above for claim 1).

Regarding claim 6, Orcutt as modified by Zhang above, teaches that the concentration of silicon dopants lies in the range 10^{17} to 10^{20} atoms per cm^3 (Col. 3, lines 31-34).

Regarding claim 7, Orcutt as modified by Zhang, teaches that the silicon dopant is phosphorus (Col. 3, lines 31-34).

Regarding claim 14, Orcutt as modified above, teaches substantially the claimed structure but does not teach that the physical means for providing physical protection against the action of electromagnetic radiation are formed by at least "one deposition of metal on the additional layer of silicon". Zhang discloses that a laminate of metal and silicon can be used as a light shielding layer (Col. 6, lines 22-26). It would have been obvious to one of ordinary skills in the art at the time of the invention to modify Orcutt such that the physical means for providing physical protection against the action of electromagnetic radiation are formed by at least one deposition of metal on the additional layer of silicon. The ordinary artisan would have been motivated to modify Orcutt for at least the purpose of providing a more effective shield wherein the one deposition of metal provides shielding above and beyond that provided by the additional layer of silicon.

Regarding claim 15, Orcutt as modified above, teaches substantially the claimed structure but does not teach the claimed metal deposition thickness; i.e. does not teach that the metal deposition has "a thickness greater than 50 Angstroms". It would have been obvious to one having ordinary skill in the art at the time the inventions was made to modify Orcutt such that the metal deposition has a thickness greater than 50 Angstroms, since it has been held that discovering an optimum value of a result effective variable (the metal thickness in this case, which can be optimized for a specific device requiring shielding from a specific intensity of electromagnetic radiation) involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 16, Orcutt as modified above discloses the metal deposition but does not specifically disclose that the metal deposition is "on the face of the additional layer of silicon that is in contact with the sealing layer". The metal deposition provides physical protection from incident electromagnetic radiation (as already explained) and would hence be provided on the face of the additional layer of silicon on which the undesirable electromagnetic radiation exposure is expected and is to be fully or partially blocked. It would have been obvious to one of ordinary skills in the art at the time of the invention to modify Orcutt to incorporate the metal deposition on the face of the additional layer of silicon that is in contact with the sealing layer. The ordinary artisan would have been motivated to modify Orcutt for at least the purpose of providing the electromagnetic radiation shielding on the surface on which electromagnetic radiation is

expected to be incident (which can be the face of the additional layer of silicon that is in contact with the sealing layer, if the substrate below the sealing layer is transparent or otherwise admits said electromagnetic radiation).

Regarding claim 17, Orcutt as modified above discloses the metal deposition but does not specifically disclose that the metal deposition is "on the face of the additional layer of silicon that is opposite to the face that is in contact with the sealing layer". As stated above, the metal deposition provides physical protection from incident electromagnetic radiation and would hence be provided on the face of the additional layer of silicon on which the undesirable electromagnetic radiation exposure is expected and is to be fully or partially blocked. It would have been obvious to one of ordinary skills in the art at the time of the invention to modify Orcutt to incorporate the metal deposition on the face of the additional layer of silicon that is opposite to the face that is in contact with the sealing layer. The ordinary artisan would have been motivated to modify Orcutt for at least the purpose of providing the electromagnetic radiation shielding on the surface on which electromagnetic radiation is expected to be incident.

Regarding claim 19, Orcutt as modified above for claim 16 teaches substantially the claimed structure but does not teach the claimed metal deposition thickness; i.e. does not teach that the metal deposition has "a thickness of about 100 Angstroms". It would have been obvious to one having ordinary skill in the art at the time the inventions was made to modify Orcutt such that the metal deposition has a thickness of about 100

Art Unit: 2811

Angstroms, since it has been held that discovering an optimum value of a result effective variable (the metal thickness in this case, which can be optimized for a specific device requiring shielding from a specific intensity of electromagnetic radiation) involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 20, Orcutt (refer to Figure 1) teaches a chip (12) that is capable of functioning as a chip-containing portable article, the chip comprising a silicon (Col. 1, lines 50-52) substrate layer (substrate layer of chip 12) having an active face with circuits integrated therein (Col. 2, lines 30-33), the chip further comprising an additional layer (18) of silicon (Col. 3, lines 3-5 and 41-42) that is sealed to the active face of the silicon substrate layer by a sealing layer (20), the additional layer of silicon (18) covering at least part of said active face (Col. 2, lines 30-33), the additional layer of silicon comprising physical means for providing physical protection (Col. 3, lines 1-3).

However, Orcutt does not teach that:

- a). that the integrated circuits define "a central processor unit and memories"; and
- b). that said additional layer of silicon that comprises physical means for providing protection is such that the physical protection is "against the action of electromagnetic radiation in the infrared range at a wavelength longer than $1\mu\text{m}$ ".

The above limitations have already been addressed in the rejection of claim 1.

Art Unit: 2811

Claims 10, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orcutt (US 4,712,129), hereinafter Orcutt, in view of Zhang (US 5,886,364), hereinafter Zhang, and further in view of Kobachi et al. (US 5,811,797), hereinafter Kobachi.

Regarding claim 10, Orcutt as modified by Zhang above teaches substantially the claimed structure, but does not teach that the physical means "for providing physical protection against the action of electromagnetic radiation are formed by surface irregularities". Kobachi (refer to Figure 22) teaches a semiconductor chip package wherein a physical means for providing protection against the action of electromagnetic radiation (Col. 15, lines 3-10) are formed by surface regularities (345). It would have been obvious to one of ordinary skills in the art at the time of the invention to modify Orcutt such that the physical means for providing physical protection against the action of electromagnetic radiation are formed by surface irregularities. The ordinary artisan would have been motivated to modify Orcutt for at least the purpose of using the irregularities to scatter the unwanted incident electromagnetic radiation (Col. 15, lines 3-10) and thus protect the device from the said electromagnetic radiation.

Note that Orcutt does disclose surface irregularities in the face of the additional layer of silicon, but does not disclose that these irregularities are such that they provide physical protection against the action of the claimed electromagnetic radiation.

Art Unit: 2811

Regarding claim 12, Orcutt as modified above teaches substantially the claimed structure but does not teach that the surface irregularities are provided "in the face of the additional layer of silicon that is in contact with the sealing layer". However, the use of surface irregularities in a light shielding layer to scatter electromagnetic radiation and thus provide physical protection against the action of the electromagnetic radiation is taught by Kobachi (Col. 15, lines 3-10). It would have been obvious to one of ordinary skills in the art at the time of the invention to modify Orcutt to incorporate the surface irregularities in shielding layer taught by Kobachi in the shielding layer (i.e. the additional layer of silicon) of Orcutt; such that the surface irregularities are provided in the face of the additional layer of silicon that is in contact with the sealing layer. The ordinary artisan would have been motivated to modify Orcutt for at least the purpose of using the irregularities to scatter the unwanted incident electromagnetic radiation (Col. 15, lines 3-10), by forming irregularities on the surface on which the electromagnetic radiation is expected to be incident (which can be the face of the additional layer of silicon that is in contact with the sealing layer, if the substrate below the sealing layer is transparent or otherwise admits said electromagnetic radiation).

Regarding claim 13, Orcutt as modified above for claim 10 teaches substantially the claimed structure but does not teach that the surface irregularities are provided "in the face of the additional layer of silicon that is opposite to the face that is in contact with the sealing layer". However, the use of surface irregularities in a shielding layer to scatter electromagnetic radiation and thus provide physical protection against the action

Art Unit: 2811

of the electromagnetic radiation is taught by Kobachi (Col. 15, lines 3-10). It would have been obvious to one of ordinary skills in the art at the time of the invention to modify Orcutt to incorporate the surface irregularities in shielding layer taught by Kobachi in the shielding layer (i.e. the additional layer of silicon) of Orcutt; such that the surface irregularities are provided on the surface on which the said electromagnetic radiation is expected to be incident; i.e. the surface irregularities are provided in the face of the additional layer of silicon that is opposite to the face that is in contact with the sealing layer. The ordinary artisan would have been motivated to modify Orcutt for at least the purpose of using the irregularities to scatter the unwanted incident electromagnetic radiation (Col. 15, lines 3-10), by forming irregularities on the surface on which electromagnetic radiation is expected to be incident (which can be the face of the additional layer of silicon that is opposite to the face that is in contact with the sealing layer).

Response to Arguments

Applicant's arguments of 1/16/2007 with respect to claims 1 and 20, and their dependent claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Art Unit: 2811

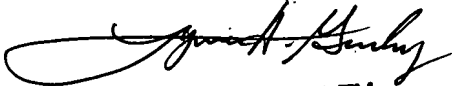
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ajay K. Arora whose telephone number is (571) 272-8347. The examiner can normally be reached on Mon through Fri, 8am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Gurley can be reached on (571) 272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AKA

Date: September 4, 2007


LYNNE GURLEY
SUPERVISORY PATENT EXAMINER
AK 2811, TC 2800